WHAT IS CLAIMED IS:

1. A 3D scanning device comprising:

a digital light encoding unit comprising a digital micromirror device for encoding a succession of structural light signals onto a light beam directed to an object, a structure of said signal being selected such that distortions thereof by a contoured object reveal three-dimensional information of said contour;

a detector synchronized with said digital light processing unit for detecting reflections of said light beam from said object, and

a decoder for determining a 3D shape of said object from distortions of said signal in said detected reflections.

2. The 3D scanning device of claim 1, wherein said rapidly changing time signal comprises binary pattern elements.

3. The 3D scanning device of claim 2, wherein said detector comprises a plurality of pixels, and each pixel is configured to output a binary signal indicating said detecting reflections.

4. The 3D scanning device of claim 2, wherein said rapidly changing time signal defines a sequence of time frames.

5. The 3D scanning device of claim 4, wherein said detector comprises a plurality of pixels, and each pixel is configured to output a single bit per time frame indicating said detecting reflections.

6. The 3D scanning device of claim 1, further comprising a preprocessor for thresholding and encoding data received at pixels of said detector thereby to recover said binary data.

7. A method of real time three-dimensional scanning of an object, comprising:

directing a light beam at said object via a digital micromirror device;

operating said digital micromirror device to modulate a rapidly changing structural light signal onto said beam;
detecting a reflection of said beam at a detector synchronized with said beam; and
decoding said reflection to determine depth information of said object.

8. The method of claim 7, wherein said rapidly changing structural light signal comprises a binary pattern element.

9. The method of claim 8, wherein said detector comprises a plurality of sensing pixels, and each pixel sends a binary signal for said decoding.

10. The method of claim 8, wherein said rapidly changing structural light signal defines time frames, wherein said detector comprises a plurality of sensing pixels and each pixel sends a single bit per time frame for said decoding.

11. A 3D scanning device comprising:
a beam source for producing a light beam for projection towards an object;
a digital light binary signal encoding unit connected downstream of said beam source, for modulating a rapidly changing structural light signal onto said light beam, said signal comprising a structure selected for distortion by a three-dimensional contour,
a detector comprising sensor pixels, synchronized with said digital light binary signal encoding unit, for detecting reflections of said light beam from said object at said sensing pixels as binary data, and
a binary decoder for determining a 3D shape of said object from distortions of said time signal in said detected reflections.

12. The 3D scanning device of claim 11, further comprising a preprocessor associated with said detector for thresholding and encoding data of said detected reflections at said sensing pixels, thereby to recover said binary data.

13. The 3D scanning device of claim 11, wherein said digital light binary signal encoding unit comprises a digital micromirror device to modulate said binary data onto said signal.

14. A method of real time three-dimensional scanning of an object, comprising:
directing a light beam at said object;
modulating a rapidly changing shape signal onto said beam, said signal comprising a shape selected such that distortion thereof is indicative of a three-dimensional contour of said object;
synchronously detecting a reflection of said beam at a detector synchronized with said modulating of said beam; and
decoding said reflection to extract distortion information of said modulated binary time signal, therefrom to determine information of said three-dimensional contour of said object.

15. A method of real time three-dimensional scanning of an object, comprising:
directing a light beam at said object,
modulating a light frame and a dark frame onto said light beam in successive frames prior to reaching said object,
detecting reflections from said object of said successive frames at a detector to obtain a light frame detection level and a dark frame detection level,
calculating a mid level between said light frame detection level and said dark frame detection level,
setting said mid level as a detection threshold at said detector,
modulating a plurality of structural light signals onto said beam in further successive frames,
detecting said successive frames at said detector using said detection threshold, thereby to provide binary detection of said structured light signal, and
determining a three-dimensional structure of said object from detected distortions in said structured light signals.

16. The method of claim 15, wherein said detecting is synchronized with said modulating.

17. The method of claim 15, wherein said modulating is carried out using a digital micromirror device.